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ELECTRONIC RECORDS ARCHIVES REQUIREMENTS DOCUMENT (RD)

(TOMP Version 2.0, Task 4.3.10)

for the

**NATIONAL ARCHIVES AND
RECORDS ADMINISTRATION**

**ELECTRONIC RECORDS ARCHIVES
PROGRAM MANAGEMENT OFFICE
(NARA ERA PMO)**

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ERA Requirements Document (RD)

1.0 Introduction

This Requirements Document (RD) defines the requirements for the National Archives and Records Administration's (NARA's) Electronic Records Archives (ERA) solution. These requirements will be used throughout the product lifecycle. During system development the RD will serve as a guide to constructing the system. Test cases will be created based on requirements from the RD. The RD will be used to provide NARA with a basis for acceptance of the system.

This document was developed based on IEEE Std 1233 – 1998.

Note: A basic knowledge of archival concepts is expected of readers of this document. This knowledge will be necessary for the reader to understand the subject matter covered herein. Documents listed in **Section 1.4, References**, of this RD can provide information helpful in understanding the ERA project and the contents of this document.

1.1 System Purpose

The National Archives and Records Administration (NARA) ensures, for the citizen and all branches of the Government, ready access to essential evidence that documents the rights of citizens, the actions of Federal officials, and the national experience. The purpose of the ERA system is to enable NARA to realize its strategic vision: "ERA will authentically preserve and provide access to any kind of electronic record, free from dependence on any specific hardware or software, enabling NARA to carry out its mission into the future."

Increasingly, this evidence takes the form of electronic products. Traditional methods of transfer, preservation, and access are not applicable in the electronic records environment. Electronic records pose unique archival difficulties, including ease of deletion and the risk that advancing technology will render records and operating systems obsolete in a short period of time, making the records inaccessible. Compounding the problem is the diversity, complexity, and enormous volume of electronic records being generated, and the rapidly changing nature of the systems that are used to create them.

The ERA solution must be dynamic (capable of responding to continuing change) and sound, ensuring that electronic records delivered to future generations of Americans are as authentic decades in the future as they were when first created. Developing an appropriate set of requirements at the beginning of the system lifecycle is essential to a successful outcome.

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1.2 System Scope

The ERA system will provide capabilities to support the following end-to-end process:

- Develop records schedules and other disposition agreements that identify documentary materials that are to be transferred to NARA, specify the terms and conditions of such transfers, and stipulate either finite or permanent retention by NARA.
- Support decisions on transfers of documentary materials of any form to Federal Records Centers, Presidential Libraries, and the National Archives.
- Accept transfers of documentary materials in electronic form, verify that these materials conform to terms and conditions of a specified transfer agreement, and store them in the system.
- Ensure that the digital documentary materials transferred to NARA remain free from corruption and remain accessible regardless of changes in information technology.
- Describe materials held by NARA so that they are clearly identified, discoverable, and retrievable, and that applicable restrictions on access are specified.
- Dispose of stored electronic records as stipulated by a records schedule or other disposition agreement.
- Enforce restrictions on access and release of electronic records.
- Segregate unrestricted content and/or redact content whose release is restricted, to enable release of unrestricted portions of a record.
- Provide access to electronic holdings.
- Output authentic copies of electronic records.
- Monitor system performance
- Schedule reports.
- Interface with other systems.
- Maintain robust system security
- Provide audit trails of system activity.

1.3 Acronyms and Definitions

Table 1-1, Acronym List, contains a list of acronyms relevant to this document.

Acronym	Definition
CMM	Capability Maturity Model
ConOps	Concept of Operations
COTS	Commercial Off The Shelf
ERA	Electronic Records Archives
FOC	Final Operating Capability
IEEE	Institute of Electrical and Electronic Engineers

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Acronym	Definition
INC	Increment
IOC	Initial Operating Capability
IPT	Integrated Product Team
IRD	Interface Requirements Document
MNS	Mission Needs Statement
MTTF	Mean Time to Failure
MTTR	Mean Time to Repair
NARA	National Archives and Records Administration
OAIS	Open Archival Information System
PMO	Program Management Office
POST	Program Office Support Team
RD	Requirements Document
RQG	Requirements Management Guidance
RQM	Requirements Management Plan
VS	Vision Statement
XML	eXtensible Markup Language

Table 1-1: Acronym List

1.4 References

Where no version is noted refer to the most recent version.

- ERA Concept of Operations (ConOps)
- ERA Vision Statement (VS)
- ERA Mission Needs Statement (MNS)
- ERA Requirements Management Guidance (RQG)
- ERA Requirements Management Plan (RQM)
- ERA Facilities Plan (under development)
- The Strategic Plan of the National Archives and Records Administration 1997-2007 (Revised 2000)
- Open Archival Information System (OAIS), CCSDS 650.0-R-2
- IEEE Std 1233 - 1998, IEEE Guide for Developing System Requirements Specifications
- IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications
- SEI Software Acquisition Capability Maturity Model (CMM), Version 1.02
- NARA Enterprise Architecture (under development)

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1.5 Overview

The RD was compiled from information gathered by two Requirements Integrated Product Teams (IPTs) (each of which created preliminary versions of this document), an ERA Program Management Office (PMO) Use Case Analysis project, interviews with key NARA subject matter experts, and concept papers written by members of the ERA PMO and ERA Program Office Support Team (POST). Requirements were defined and decomposed from those sources to create functional, performance, non-functional, behavioral, and informational requirements. The requirements were then further refined and categorized based on the Open Archival Information System (OAIS) standards.

Guidance utilized for the development of requirements is contained in the *Requirements Management Plan* (RQM) document. Requirements were developed in compliance with NARA's Strategic Goals. See **Appendix A, Requirements Document Level 0 Requirements & NARA Strategic Goals Mapping**, for a mapping of requirements to NARA's Strategic Goals.

2.0 General System Description

ERA will be an agency-wide system capable of supporting NARA's lifecycle management process for records of the U.S. Government and for donated historical materials from private sources. It will be capable of automating the execution of those management processes and of ingesting, preserving, and outputting the electronic records that NARA receives from other federal entities and private sources.

The system concept is described more extensively in the *Concept of Operations* (ConOps) document.

2.1 System Context

The ERA system will support NARA's lifecycle management of records of the President, the Congress, the Supreme Court, and agencies of the U.S. Government. In addition, the system will also be used for documentary materials accepted by NARA under a deed of gift. Some of the records transferred into the system will remain under the authority and control of their creators for varying periods of time, while NARA will assume legal custody of other materials. Some of the materials will be "temporary" and will be kept in the system only for a finite time, which may vary from a few years to many decades, while "permanent" materials will be preserved by NARA forever. All documentary materials in the system will be managed as records. A record can be any form of documentary material. A record has a fixed content, structure, and a specified context that identifies the record creator, the activity in which the record was made or received, and the relationship to other records of the same creator.

ERA will conform to and be prominent in NARA's enterprise architecture infrastructure. It will provide comprehensive and coherent support for workflow, data management, and

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communications for management processes for all records and provide all necessary processing of electronic records. ERA's automated processes will support the record's producer, archivist, researcher, and other users.

The system context will be government-wide, and will operate within the context of the Federal Enterprise Architecture. It will be capable of interfacing with other applications throughout the Federal Government for transfer of electronic records to NARA, retrieval of such records by their creators, and for records management processes in which NARA interacts with other entities in all three Branches of the Government. The volume and diversity of input and output data, and the expected heavy use of the system, will have considerable impact on the NARA computing environment. Interfaces to other NARA systems, as well as other government agency systems, will be accommodated by ERA. Specific interfaces are yet to be determined, and will be described in Interface Requirements Documents (IRD) when identified. A Context Diagram will be provided in the future.

2.2 Major System Capabilities

The ERA system must support NARA's end-to-end processes for appraisal and scheduling, transfer, accessioning, description, maintenance, and access to records. The ERA system will provide capabilities in two different areas.

- (1) The system must provide decision support for NARA management processes for the lifecycle management of records of all types. The system must also support records management processes, such as appraisal, scheduling, and description, that apply to both electronic records and records in other media.
- (2) The system must provide capabilities for automated processing of electronic records themselves. These processes include:
 - Physical transfers of sets of electronic records, via telecommunications and on physical media, from their originators to NARA
 - Verification that transferred sets of electronic records conform to terms and conditions of disposition agreements
 - Validation of the technical specifications for any set of electronic records
 - Long-term storage of electronic records
 - Transformations of electronic records to maintain accessibility and authenticity
 - Characterization of electronic records for archival description
 - Redaction of restricted content
 - Search, retrieval, presentation, and output of the records
 - Disposal of records authorized for destruction

To achieve NARA's mission and support the broad range of its responsibilities, the system should eliminate or minimize dependence on any specific hardware or software. It should maximize the types of electronic records and types of digital data it can handle.

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The system should be able to ingest electronic records from a wide variety of sources, including any entity in the Federal Government or private donors, created using any type of application on any computing platform. It should provide discovery and delivery of documentary materials to anyone with an interest and legal right of access, from now until the end of the republic. The system must accommodate unscheduled, permanent, and temporary electronic records regardless of record type, data format, or physical media.

2.3 Major System Constraints

This section identifies conditions that may impact the system architecture or specific components of the system.

- ERA will be implemented in a policy neutral manner (able to implement policies as identified by NARA throughout the system lifecycle).
- ERA must comply with Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d).
- ERA must be capable of providing different levels of service depending on:
 - Agreements with records originators
 - NARA's business strategies and priorities
 - Laws and regulations requiring differential controls on access depending on both type of information and category of user
 - Technological characteristics of the records, including obsolescence, variations in data quality, and proprietary formats
- ERA's design and implementation must be flexible and adaptable to changes in hardware, software, communication technology, archival processes, policy, personnel, locations, etc.
- ERA will store and process records in environments appropriate to their stated sensitivity, and enforce access privileges and restrictions.
- ERA will be implemented in accordance with the ERA Facilities Plan.

2.3.1 Compliance with Regulations, Standards, and Guidelines

ERA must be developed and maintained in compliance with NARA and Federal standards, guidelines, and regulations.

2.3.1.1 Compliance with NARA Regulations, Executive Orders, and Other Federal Policies for Lifecycle Management of Records.

ERA must comply with NARA regulations in 36 CFR Subchapter B. ERA must support transfers of records to and from Records Management Applications that conform to DoD 5015.2-STD.

ERA must comply with NARA's enterprise architecture.

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2.3.1.2 Compliance with Voluntary Standards

- XML Schema
- ISO OAIS reference model

2.4 User Characteristics

Characteristics of users will vary widely with respect to their knowledge of the materials held by NARA, the functions performed and activities supported by the system, and their frequency of use of the system. ERA must provide a variety of user tools, workbenches, and help functionality to accommodate the needs of a very diverse user community.

Users will include:

- NARA employees with specific archival and records management functions to perform
- Professional researchers, historians, and authors with considerable knowledge of specific portions of NARA holdings
- Legal professionals and politicians
- Genealogists (professional and amateur)
- The general public, with little or no knowledge of NARA holdings, or of archival practices in general
- System administrators responsible for the performance and maintenance of the system, as well as administering user accounts
- Other federal employees and contractors dealing with records of their agencies or interacting with NARA employees

2.5 Concepts and Assumptions

ERA must manage all holdings in compliance with the archival principles of provenance and respect for the original order. NARA holdings fall into two main categories: records of the U.S. Government and donated materials from private sources. Like government records, donated materials are managed as collections identified with their provenance and kept in the order established by their creators. Because of this common fundamental basis, both government records and donated materials are interchangeably referred to as both “records” and “documentary materials” in this document.

The system must be capable of preserving electronic records for varying periods of time, ranging from a few years to forever. For permanent records – those preserved forever – and for some temporary records which need to be kept for lengths of time that exceed several generations of information technology, it will be necessary to convert the records from the “native” formats in which they are stored by their creators to persistent formats. A persistent format is one that is supported by a preservation strategy for diminishing the impacts of technological obsolescence, minimizing dependence on specific hardware and

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software, and enabling retrieval and output of authentic copies in the future. An ideal persistent format would be self-describing and self-validating.

The system must be capable of outputting authentic copies of electronic records; that is, copies that retain the original content, structure, context, and often the original presentation or rendering of the materials transferred to NARA. This does not necessarily entail that all digital properties of electronic records must remain unaltered over time. Continuing change in information technology makes it practically inevitable that it will be necessary and desirable to change the way that electronic records are materialized as digital objects in order to ensure that the records retain their essential content, structure, context, and presentation across generations of hardware and software. The system will be required to deliver electronic records to target platforms across the U.S. Government and the nation over unlimited time frames. Digital properties that may have to be changed include physical media and physical file characteristics and labels, and also digital data types and related methods. However, any change of digital properties must preserve the records' attributes unchanged.

ERA will implement formal controls that constrain variables, direct the behavior of the system, or set parameters of the system. Such controls may include templates (e.g., schemas, taxonomies, ontologies), business rules, and other appropriate means to manage the structure, syntax, content, context, presentation, and lifecycle of records. NARA will specify a template that identifies classes of records, classes of aggregates of records, document types, digital data types, and records lifecycle transactions. Records producers will define and register with NARA schemas which conform to this template and specify the properties of specific aggregates or classes of records which they produce and maintain. ERA may implement other formal controls to express essential syntactic, semantic, presentation, or ontological properties and related methods of the class of objects that it governs. The system will apply such controls to manage records lifecycle transactions and other processes involving electronic records to govern the development and implementation of specific preservation strategies, and to enable production of authentic copies of electronic records.

Preserving the context of records requires maintaining the relationships among records that were established by their creators. Typically, record relationships are established by placing the records in a hierarchical arrangement by grouping records in files, and files in a filing system that may include several levels. Other relationships may exist, such as those defined by the logical or conceptual models of databases, or established empirically by object linking. Preserving this context requires that the system capture information about the relationships among records and be able to instantiate the structure of the recordkeeping system and correctly place records in that structure on a target platform. The information about the arrangement defined by the records creators will be captured in appropriate templates, which will be used as a basis for reestablishing the structures and relationships when records are retrieved from storage.

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- Ideally, electronic records should be preserved in persistent and self-describing formats.
- For the foreseeable future, electronic records ingested into the system will be predominantly in legacy formats which are subject to rapid obsolescence and neither self-describing nor self-validating.
- The system must be capable of outputting electronic records that satisfy archival requirements for authenticity.
- The system must be capable of exporting preserved records to target platforms for as long as the records are retained, which may be forever.

2.6 ERA Capabilities by User Class

This section describes the major capabilities the system will provide for user classes as defined in the ERA ConOps document. Note that some capabilities cross user class boundaries and might be employed by users in more than one user class. User classes do not correspond to NARA position titles, nor does a user class correspond to a single individual user. Rather each user class describes a role that a user assumes in interacting with the system. An individual user may assume different roles to accomplish different purposes.

Originating Entity

- ERA receives electronic documentary materials from originating entities
- ERA offers tools to assist originating entities in preparing documentary materials for transfer to ERA
- ERA enables the originating entity to exchange management information with NARA on transactions related to lifecycle management of their records in all media, not just electronic. Such transactions include the scheduling and appraisal of government records, the development of deposit agreements, the retirement of records to NARA's physical custody, the transfer of permanent records to the National Archives and Presidential Libraries, and the review, redaction, and release of information subject to legal restrictions on access.
- ERA enables originating entities to transfer electronic documentary materials to NARA
- ERA enables originating entities to control user access to electronic records that remain under their legal custody
- ERA allows originating entities to search for templates (e.g., schemas, taxonomies, ontologies) and other record lifecycle data about documentary materials
- ERA allows originating entities to enter and register templates and other technical specifications that apply to their records
- ERA provides a reliable method of communication between the originating entity and NARA
- ERA provides tools for the originating entities for creation and submission of records schedules and other types of disposition agreements

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Appraiser

- ERA enables the appraiser to search for and retrieve existing records schedules, deposit agreements, and appraisals.
- ERA validates templates and other technical specifications for conformance to NARA requirements
- ERA accepts transfers of samples of documentary materials
- ERA facilitates the review of documentary materials for appraisal
- ERA facilitates the development, review, approval, and revision of disposition agreements
- ERA generates tracking, performance, and implementation reports
- ERA provides a reliable method of communication between the originating entity and the appraiser

Archival Processor

- ERA receives transfers of electronic documentary materials
- ERA facilitates verification of transfers against specifications in disposition agreements
- ERA supports the validation of transferred materials against applicable templates, schemas, and other technical specifications
- ERA facilitates taking legal custody of materials
- ERA facilitates identification of documentary materials for national security, privacy, and other restricted information
- ERA facilitates review and verification of content and structure of documentary materials
- ERA identifies relationships between digital objects, records, and sets of records
- ERA facilitates changes to relationships between documentary materials

Preserver

- ERA facilitates the articulation, registration, application, and management of templates (e.g., ontologies, taxonomies, and schemas) for classes and sets of records
- ERA validates formal controls and specifications against NARA standards and requirements for preservation of authentic electronic records
- ERA supports testing and evaluation of options for preserving and providing access to documentary materials
- ERA implements preservation strategies for target classes, sets of records, and digital data types
- ERA verifies preservation of documentary materials
- ERA transforms documentary materials to persistent formats
- ERA documents all preservation processes
- ERA facilitates description of documentary materials

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- ERA ensures integrity of data in transmission, storage, media migration, and technology refreshment
- ERA enables improvement of quality or service

Access Reviewer

- ERA supports systematic and ad hoc review of collections of electronic records for content that may be exempt from release
- ERA allows for review of specified electronic records in response to a request
- ERA facilitates coordination of access review issues with equity-holders outside NARA when necessary
- ERA indicates the item access status when the review is complete
- ERA facilitates redaction of sensitive information in electronic documentary materials to produce disclosure-free versions
- ERA provides for changes to access status determinations and maintains and tracks the various versions
- ERA tracks access review work and produces reports regarding production

Record User

- ERA supports discovery and retrieval of information about all types of documentary materials held by NARA
- ERA provides searching capabilities against electronic documentary materials
- ERA retrieves and presents electronic documentary materials
- ERA allows for mediated search and retrieval requests
- ERA facilitates searching for documentary materials at multiple levels of aggregation
- ERA provides tailorable output options including free and fee-based ordering of copies, extracts, and other derived products

Administrative User

- ERA enforces access control
- ERA registers users and creates user accounts
- ERA provides reporting capabilities
- ERA tracks workflow
- ERA tracks use of ERA
- ERA provides performance measurement capabilities
- ERA provides disaster recovery

2.7 Requirements Categorization

In this section, the requirements are summarized into categories based on the Open Archival Information System (OAIS) model. A brief description of each category, and a summary of the appropriate requirements, is presented in the following subsections.

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2.7.1 Records Management (referred to as “Data Management” in the OAIS model)

Records Management in the ERA system consists of two distinct types of activities: those required to manage the data which constitutes the electronic records being preserved, and those required to manage record lifecycle data and the processes applied to them.

The ERA records management process includes:

- Managing disposition agreements
- Assumption of legal custody of records
- Destruction of records
- Managing arrangements of records
- Archival description of the records
- Managing authority sources
- Managing record lifecycle data

Managing disposition entails the ability to receive transfers of records, accession the records, transfer records to other entities, and destroy records. Disposition agreements govern the disposition of records. ERA will have the ability to carry out the instructions of the disposition agreements in an automated fashion.

Disposition agreements contain the instructions for what is to be done with sets of records. Several types of instruments can serve as a disposition agreement; the most prevalent of which is a records schedule. ERA must provide tools for the creation and management of disposition agreements for all types of records and private papers, not only electronic. These tools must support archival appraisal of the value of records as well as the development and management of the disposition agreements that implement the results of appraisal.

The system will manage the arrangement of records. Specific records are kept together or arranged because:

- They relate to a particular subject or function,
- Result from the same activity,
- Document a specific kind of transaction, and/or
- Take a particular physical form, or have some other relationship arising out of their creation, receipt, or use, such as restrictions on access and use.

Groups of records received into ERA will have an inherent arrangement that must be preserved. Once the records are in NARA custody, ERA must support archivists creating additional arrangements of the records.

Archival record descriptions identify the key characteristics of documentary materials. As a rule, NARA describes records at the aggregate levels of record groups or

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collections, and series, although some types of records, such as motion pictures, are described at item level. Manual and automated creation and maintenance of archival descriptions must be supported. ERA will provide tools to automatically extract descriptive information from electronic records themselves, from documents such as disposition agreements, and from other sources for all types of records. ERA will assist archivists in manually creating descriptions. Descriptions must be managed in accordance with NARA defined hierarchies of records and organizations. The use and management of authority sources for descriptions is required. The ability to link to related descriptive information within the system will be available.

Information about the records will sometimes be received with the records. Additional information will accumulate throughout the records lifecycle. ERA must provide the capability to collect and manage this information.

2.7.2 Preservation (referred to as “Preservation Planning” in the OAIS model)

Electronic documentary materials are created using the software and hardware available at the time of their creation. Rapidly changing technology results in obsolescence of a given software and hardware platform in a relatively short time. Documentary material created in these obsolete platforms, and dependent upon them, is in danger of becoming inaccessible. Continuing change in information technology creates opportunities for improving efficiency and quality, and a concomitant requirement to deliver preserved documentary materials on state of the art technology. Preservation determines preventive, reactive, and proactive steps to be taken to ensure that the documentary materials remain free from corruption, and can be output as authentic copies independently of the information technology used to create, store, transmit, manage, or process them at any time. Preservation must encompass the properties that the documentary materials inherit as a result of being digitally encoded, and those that derive from their being records.

The essential requirement that must be addressed in preservation for electronic records is how to preserve the essential properties of records and enable the output of authentic copies of electronic records in the face of continuing change in the information technology used to store, retrieve, process, communicate, and manage these materials. A preservation plan is articulated for each *collection* of records that will be preserved in ERA for any length of time. For each collection, the preservation plan identifies the essential properties of the collection, and of any defined subsets within the collection, that must be preserved. It also identifies the methods that will be applied to preserve those properties, and enables NARA to perform any required services for the collection or the records in it. The revised ERA ConOps document will describe three different preservation strategies, and related levels of service. A preservation plan must implement one of these strategies. A preservation plan will be established whenever NARA agrees to accept the retirement or transfer of any collection of electronic records.

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Preservation processes and services will be provided only for electronic records, although this includes electronic versions of records that had been stored on paper or other analog media. The key preservation process required for all electronic records is the production of authentic copies of the records from stored data. ERA should provide appropriate tools, techniques, and methods to enable output of authentic copies of any records in the system for as long as they need to be maintained, which will range from a few years to forever.

The requirements for preservation derive from the properties of the preserved information as records and aggregates of records. Preservation of these properties may, and in some cases must, entail alterations in the digital instantiation of the records. Such alterations will include moving stored data to new physical media, and may include changing the way the records are digitally encoded from an obsolescent to a persistent format.

NARA's goal is to preserve electronic records in persistent formats that will enable access to authentic records indefinitely into the future. An ideal persistent format would be self-describing and self-validating in accordance with open, nonproprietary standards. However, given the size and complexity of the task NARA faces in this area, and given that some records will be preserved for only a relatively short period with a very low expected use, the system must provide a variety of options for preservation. Options must include short-term and intermediate steps.

Preservation processes will include the articulation, registration, and validation of templates, schemas, and other controls that will specify the record properties which must be preserved and be linked to methods that will both preserve those copies and support production of authentic copies. Any disposition agreement that provides for transfer of electronic records to ERA must be linked to a plan that specifies preservation and access requirements for those records, identifies the metadata and other technical specifications needed to address those requirements, and specifies the methods that will be used to satisfy them. The system should be able to impose the controls and execute the actions called for in the plan once the records are transferred. Such actions may need to be executed at the start of the transfer process, in the originating entities system. Therefore, ERA will support the production of Submission Information Packages, as defined in the OAIS standard, by originators.

The system must generate and maintain an audit trail of all preservation actions to support certification of the authenticity of records output from the system.

2.7.3 Workflow

In order to automate the records lifecycle to the greatest extent feasible, and to keep pace with changing needs, ERA will require a configurable workflow able to control both the tasks that the system performs unattended, and tasks that require staff-system interaction.

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Invocation of ERA's services based on defined business rules will be accomplished through a workflow management system.

The workflow system should be capable of supporting multiple different workflows, corresponding to the different lines of business, different procedures, and variety of tasks which NARA units perform. There should be enough flexibility in the workflow management system to allow the workflow to be changed to accommodate exceptions or changes in the business processes. ERA will have the capability to "customize" workflows to accommodate these changing business processes and exceptions.

Units of work will be defined, and the system will provide for monitoring the progress of these work units. Input required from users to complete a process will be handled by workflow. Notifications to users regarding workflow processes will be generated.

ERA will have the ability to assign tasks to NARA staff, assign due dates, monitor progress, and note completion of the tasks. Monitoring of staff and system workload will be provided, as well as the capability to adjust workloads to alleviate problems.

2.7.4 Archival Storage

ERA requires reliable storage of the data that comprises electronic records. Aspects of reliable archival storage include:

- Storage management services
- Media management to ensure physical integrity of all stored data
- Identification and location of all stored objects
- An inventory of holdings that maps the stored objects to records, files, series, and other records aggregates
- The management of multiple copies of stored objects
- Media migration
- Enforcement of access restrictions and rights

NARA has a variety of requirements for maintaining and managing multiple copies of data objects for varying periods of time. These include:

- Storage of redundant copies to support both continuity of operations and data recovery
- Routine backup of individual instances of the system
- Storage of versions of electronic records in different digital formats for archival preservation and access purposes
- Storage of original and public-use versions of records that contain restricted content
- Temporary storage of copies of holdings on or near client platforms to facilitate various processes involving the records

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Pre-processing records, preservation processed records, replacement records, and off-site copies must be supported.

Media requirements include:

- Use of media that is known to be durable
- Media is expected to be available and supported in the market for as long as it needs to be retained
- Media is formatted, labeled, and recorded in accordance with open standards
- Media is supported by bit error detection and reporting, as well as by strong error-correction mechanisms, self-describing and non-encrypted.

Import and export of media must be handled. ERA will support automated media maintenance and tools to recover data from failed media. The capability for migration of stored data to new media volumes and media types to improve efficiency or reliability is needed.

2.7.5 Security

ERA security includes both protecting assets from inappropriate access and damage and ensuring continuing and ready access to assets by authorized users. ERA must protect the electronic holdings it contains, as well as the system itself, from a variety of threats. Security methods must be applied to system resources and services, users, and information assets.

ERA will receive and house records with a variety of security and sensitivity levels. It will be necessary for ERA to recognize the security and sensitivity levels of incoming records, and segregate and protect them based on their security and sensitivity levels. Protection for electronic holdings should include the use of strongly authenticated access to privileged resources (i.e., restricted records or services) supported by a robust audit trail. Another form of protection is the use of digital signature technology because it provides a means for determining whether either an unauthorized individual or a system error has modified a record. In addition, it indirectly allows responsibility to be assigned to an authorized individual who seals the archival record (sometimes referred to as non-repudiation). Electronic holdings must be protected against unauthorized access, alteration, or deletion. Data access control schemes will be configurable.

Protection for the ERA system itself should include intrusion detection and deterrence. Access to services will be controlled on a user privilege basis. Again, strong authentication will be employed, in this instance when exchanging data with external sources.

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2.7.6 Ingest

Ingest encompasses the process of bringing records into ERA. Records are brought into ERA for limited-term storage in a Federal Records Center, or for permanent preservation in the National Archives or a Presidential Library. The ingest process includes:

- Physical transfer of records to ERA
- Verification of the transfer contents

ERA must facilitate the transfer of electronic records. Originators must be able to transfer all types of electronic records in all supported file formats, electronically as well as on media. The system must verify the integrity, correctness, and completeness of each transfer and validate that the transferred documentary materials conform to the terms of the disposition agreement and can be preserved and serviced in accordance with the defined preservation plan.

2.7.7 Access

Providing access to holdings requires search capabilities for discovering records. Accurate presentation of the records is important. ERA must be able to provide access to ordered sets of records in the groupings and arrangements established by the records creators. Providing access entails both providing users with access to anything they are entitled to receive, as well as preventing unauthorized access to restricted contents. Access restrictions may apply to entire sets of records, to individual records, or to elements of content within records. The basic law governing access to federal records requires NARA to provide unrestricted access to any reasonably segregable information in the National Archives.

A robust search capability is required. All types of electronic records shall be searchable. Searching by description, record content, and record lifecycle data must be supported. Refining and ranking of search results will be available. Users will be able to save and share searches and search result sets. “Mediated” search capabilities (searches performed by NARA staff on behalf of users) will be supported.

Accurate presentation and output of holdings is central to ERA’s purpose. The integrity of the record must be maintained during presentation and output. This includes ensuring that any functionality that is part of the essential characteristics of the record shall remain functional when the record is presented or output by ERA. Holdings will be made available in a variety of formats and media types. Users may request output copies of records via ERA. If a record is withheld, ERA will provide an explanation of the reason for withholding to the requestor.

ERA will support the review of electronic records to identify sensitive information that should be withheld from release either in general or from a specific class of users. ERA

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will capture and maintain the review determination and supporting information about the determination.

ERA will provide tools for redacting records. Automated redaction capabilities will be provided, as well as the capability for redaction to be performed by a user. Supporting information about the redaction will be captured.

2.7.8 User Interface

The user interface will provide users with access to ERA's various services. Default interfaces will be provided by ERA to permit different classes of users to perform authorized functions. Users will be able to customize interfaces to provide a more favorable environment, better suited to their needs and preferences. Changes to a user's workbench will be saved and made available to the user in subsequent sessions.

2.7.9 Administration

Administration includes multiple, diverse capabilities at both the user and system level. Administration involves managing user registration and accounts, providing assistance to users, managing communications between users and ERA, maintaining the event log, and providing reporting capabilities. System testing, monitoring, and parameter adjustability requirements are also included. Finally, management of system failures is included.

ERA will collect registration information from users, and create user accounts based on the information. Accounts will expire periodically, but users can renew their registration.

ERA will provide user assistance in the form of help screens and online guidance to NARA's business functions. Help desk support functionality will be available.

ERA will manage communication with users. ERA will manage the generation of notices for transmittal to users. Ad hoc notices, as well as standard language notices can be created and sent. Receipt of requests from users will be included, as will tracking responses to requests.

ERA will maintain an event log. All system events will be eligible for logging, but NARA can configure the log functionality by specifying what type of events to log, and the retention period for types of log entries.

Reporting capability will be provided. A number of pre-defined reports will be supported. Reports can be saved.

The capability to perform end-to-end system testing is needed. The monitoring of the system state, and the capability to adjust system parameters, is required. Management of system failures via identification and isolation leading to resolution is required, as is notification in the event of a failure.

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2.7.10 System Characteristics

System characteristics include a mix of functional, architectural, and performance-related requirements. Subscriptions, service management, load, and availability requirements are included.

Subscriptions will be supported by ERA. Subscription services provide for creation and management of subscriptions to system services. Subscriptions can be scheduled or triggered by a system event.

Service management consists of support for queuing of services, monitoring service progress, prioritization of services, preemption of a service, suspension of service processing, and resumption of services. Check pointing is required, as is the ability to limit service execution times.

Availability requirements are on a per-service basis and are addressed in **Table B-1, ERA Availability Requirements**. For the purposes of these availability requirements, the specified services are composed of Commercial Off The Shelf (COTS), and/or custom-developed hardware and software.

See **Appendix B, Requirements Tables**, for further details.

3.0 Requirements List

The requirements in the Requirements List are numbered independently of the numbering of the rest of this document. The requirement numbers do not correspond to the section numbering in the rest of the document.

Records Management

ERA1 The system shall provide for the disposition of records

ERA1.1 The system shall provide for management of disposition agreements

ERA1.1.1 The system shall provide tools to create disposition agreements

ERA1.1.1.1 The system shall provide tools to create records schedules

ERA1.1.1.2 The system shall provide tools to create deeds of gift

ERA1.1.1.3 The system shall provide tools to create transfers to record centers

ERA1.1.1.4 The system shall support creation of template disposition agreements

ERA1.1.1.5 The system shall support creating new disposition agreements based on existing disposition agreements

ERA1.1.2 The system shall store disposition agreements

ERA1.1.2.1 The system shall assign a unique identifier to each disposition agreement

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- ERA1.1.3 The system shall support assigning a status to a disposition agreement
 - ERA1.1.3.1 The system shall report on the status of a disposition agreement upon request
- ERA1.1.4 The system shall provide the capability to modify draft disposition agreements
 - ERA1.1.4.1 The system shall provide the capability to delete disposition agreements
- ERA1.1.5 The system shall manage versioning of disposition agreements
- ERA1.1.6 The system shall provide the capability to receive disposition agreements from third party systems
- ERA1.1.7 The system shall provide for approval of disposition agreements
- ERA1.1.8 The system shall support including disposition instructions that can be automatically processed by the system in disposition agreements
 - ERA1.1.8.1 The system shall validate disposition rules contained in disposition agreements to ensure that they can be processed by the system automatically
- ERA1.1.9 The system shall support defining relationships between disposition agreements
- ERA1.1.10 The system shall accommodate the inclusion of file plans in disposition agreements
- ERA1.1.11 The system shall accommodate the inclusion of descriptive information about records in disposition agreements
- ERA1.1.12 The system shall validate disposition agreements
 - ERA1.1.12.1 The system shall validate disposition agreements for conformance to the appropriate template
 - ERA1.1.12.2 The system shall provide disposition agreement validation results to the user
- ERA1.1.13 The system shall prefill agency information from the agencies' ERA registration into the disposition agreement when available
- ERA1.2 The system shall provide the capability to manage requests to transfer records from originating entities to ERA
 - ERA1.2.1 The system shall store information about the authorization to transfer
 - ERA1.2.2 The system shall store information about the volume of transfer
 - ERA1.2.3 The system shall store information about the duration of transfer
 - ERA1.2.4 The system shall provide the capability to associate the transfer with registered templates
 - ERA1.2.5 The system shall support the capability to deny the transfer of records
- ERA1.3 The system shall provide for accessioning of records
 - ERA1.3.1 The system shall provide the capability to obtain formal acceptance of records into NARA custody
 - ERA1.3.1.1 The system shall provide the capability to deny the acceptance of records into NARA custody
 - ERA1.3.1.2 The system shall obtain appropriate authorizations from NARA to accept records into NARA custody

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ERA1.3.1.3 The system shall obtain appropriate authorizations from originating entities to accept records into NARA custody

ERA1.3.2 The system shall prevent the destruction of records appraised as permanent

ERA1.4 The system shall support the export of electronic records from ERA to third party entities

ERA1.4.1 The system shall export individual records from ERA to third party entities

ERA1.4.2 The system shall export groups of records from ERA to third party entities

ERA1.4.3 The system shall remove exported records from ERA holdings

ERA1.4.4 The system shall support export of any electronic record stored in ERA to a third party

ERA 1.4.5 The system shall support export of all versions of any electronic record stored in ERA to a third party

ERA1.4.6 The system shall preserve the structure of all components of when records are exported

ERA1.4.7 The system shall preserve the content of all components of when records are exported

ERA1.4.8 The system shall provide the capability to export record lifecycle data along with the exported records

ERA1.4.9 The system shall provide the capability to export archival descriptions along with the exported records

ERA1.4.10 The system shall provide the capability to export records without descriptive information

ERA1.5 The system shall provide the capability to destroy any electronic record

ERA1.5.1 The system shall have the capability to automatically queue records for destruction based on disposition instructions

ERA1.5.2 The system shall provide the capability for a user to select records for destruction

ERA1.5.3 The system shall confirm that all required authorizations have been received prior to destroying records

ERA1.5.4 The system shall have the capability to destroy the record lifecycle data associated with a destroyed record

ERA1.5.5 The system shall provide the capability to destroy records in accordance with Federal guidance

ERA1.5.6 The system shall provide the capability to destroy all copies of a record

ERA1.5.7 The system shall provide the capability to destroy all versions of a record

ERA1.5.8 The system shall certify the destruction of records

ERA1.5.8.1 The system shall provide documentation to certify the destruction of records

ERA1.5.9 The system shall destroy records such that the records can not be recovered

ERA1.5.10 The system shall provide the capability to destroy records in accordance with DOD5220.22-M

ERA1.6 The system shall automate the implementation of disposition instructions for electronic records

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- ERA1.6.1 The system shall provide the capability for users to suspend automatic implementation of any disposition instruction
- ERA1.6.2 The system shall provide the capability for users to resume automatic implementation of any suspended disposition instruction
- ERA1.7 The system shall provide the capability to project scheduled transfers in accordance with disposition agreements

ERA2 The system shall support management of arrangements of electronic records

- ERA2.1 The system shall have the capability to present electronic records to users in accordance with a predefined arrangement
- ERA2.2 The system shall support the input of data defining the original order by users
- ERA2.3 The system shall provide the capability to recreate the arrangement of records as it is defined in the information provided by the originating entity
 - ERA2.3.1 The system shall support the use of file plans provided by the originating agency to determine the original order
 - ERA2.3.2 The system shall support the use of templates provided by the originating agency to determine the original order
- ERA2.4 The system shall support multiple arrangements
 - ERA2.4.1 The system shall manage versions of arrangements
 - ERA2.4.2 The system shall provide the capability to define arrangements of records in addition to the original order
 - ERA2.4.3 The system shall provide the capability to implement arrangements of records in addition to the original order
 - ERA2.4.4 The system shall provide the capability to define the relationship between an element in one arrangement and an element in another arrangement
- ERA2.5 The system shall support the deletion of arrangements
- ERA2.6 The system shall support the association of electronic records with a defined arrangement
- ERA2.7 The system shall support the definition of the position of an electronic record in an arrangement
- ERA2.8 The system shall support the hierarchical grouping of sets of records within an arrangement
- ERA2.9 The system shall support the association of additional records with an arrangement over time
- ERA2.10 The system shall support the association of additional sets of records with an arrangement over time

ERA3 The system shall provide for archival descriptions

- ERA3.1 The system shall support description of records at multiple levels
 - ERA3.1.1 The system shall provide for the description of record groups
 - ERA3.1.2 The system shall provide for the description of collections
 - ERA3.1.3 The system shall provide for the description of series

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- ERA3.1.4 The system shall provide for the description of file units
- ERA3.1.5 The system shall provide for the description of individual records
- ERA3.2 The system shall support hierarchical description
 - ERA3.2.1 The system shall provide for the hierarchical description of aggregations of records
 - ERA3.2.2 The system shall provide for the hierarchical description of organizations
 - ERA3.2.3 The system shall provide for defining new hierarchical description levels
 - ERA3.2.4 The system shall impose no practical limit on the number of hierarchical description levels that may be defined
- ERA3.3 The system shall support the creation of descriptions
 - ERA3.3.1 The system shall provide for the creation of descriptions by users
 - ERA3.3.1.1 The system shall provide tools for creation of new descriptions by users at every level of aggregation
 - ERA3.3.1.2 The system shall provide for the creation of new descriptions based on users modifying similar existing descriptions
 - ERA3.3.2 The system shall provide for the automatic creation of descriptions
 - ERA3.3.2.1 The system shall provide for users selecting whether or not to automatically create descriptions
 - ERA3.3.2.2 The system shall provide for users selecting the level of aggregation of the automatically-created description
 - ERA3.3.2.3 The system shall provide the capability to integrate information provided by approved sources into automatically-created descriptions
 - ERA3.3.2.4 The system shall check the quality of system-generated descriptions against NARA-defined standards
- ERA3.4 The system shall provide the capability of linking descriptions at all levels of aggregation with the records they describe
- ERA3.5 The system shall provide the capability to import previously created descriptions from external systems
- ERA3.6 The system shall provide the capability to export descriptions
- ERA3.7 The system shall support updating descriptions
 - ERA3.7.1 The system shall provide capability for users to update descriptions
 - ERA3.7.2 The system shall automatically update aggregate-level descriptions in response to accretions of additional records to the aggregation
- ERA3.8 The system shall provide the capability to approve descriptions
- ERA3.9 The system shall support versioning of descriptions
- ERA3.10 The system shall support assigning a status to descriptions
- ERA3.11 The system shall support deleting descriptions
 - ERA3.11.1 The system shall provide the capability to delete any version of a description
- ERA3.12 The system shall provide the capability to associate related materials with descriptions
 - ERA3.12.1 The system shall provide the capability to link to related resources from within descriptions
- ERA3.13 The system shall accept information about records provided in electronic forms

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ERA3.14 The system shall support the description of functional relationships that change over time

ERA4 The system shall manage authority sources

ERA4.1 The system shall provide for the creation of authority sources within ERA

ERA4.2 The system shall provide access to authority sources

ERA4.3 The system shall provide for the deletion of authority sources

ERA4.4 The system shall provide for the update of authority sources

ERA4.5 The system shall support linking to external authority sources

ERA4.6 The system shall support importing authority sources

ERA4.7 The system shall support maintaining authority sources

ERA4.8 The system shall support the use of authority sources

ERA4.9 The system shall manage complex thesauri

ERA4.10 The system shall manage authority lists

ERA5 The system shall provide for the management of record lifecycle data

ERA5.1 The system shall impose no practical restriction on the number of record lifecycle data elements allowed for each record managed by the system

ERA5.2 The system shall impose no practical restriction on the number of record lifecycle data elements allowed for each record class managed by the system

ERA5.3 The system shall impose no practical restriction on the number of record lifecycle data elements allowed for each archival item managed by the system

ERA5.4 The system shall support sets of record lifecycle data elements to be defined for sets of electronic records

ERA5.5 The system shall extract record lifecycle data elements automatically from records

ERA5.6 The system shall extract record lifecycle data elements automatically from templates

ERA5.7 The system shall provide the capability to define technical specifications for electronic records

ERA5.8 The system shall provide the capability to verify that electronic records correspond to technical specifications

Preservation

ERA6 The system shall provide for the management of templates

ERA6.1 The system shall provide a template repository

ERA6.2 The system shall provide for management of templates within the template repository

ERA6.2.1 The system shall provide for user submission of templates to a repository

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- ERA6.2.2 The system shall provide the capability to access templates in the template repository
- ERA6.2.3 The system shall provide the capability to modify templates in the template repository
- ERA6.2.4 The system shall provide the capability to delete templates from the template repository
- ERA6.2.5 The system shall flag templates for which all associated records have been destroyed
- ERA6.3 The system shall provide the capability to produce draft templates
- ERA6.4 The system shall provide for creation of new templates by users
 - ERA6.4.1 The system shall provide the capability to create a new template based on a record
 - ERA6.4.2 The system shall provide the capability to create a new template based on a disposition agreement
 - ERA6.4.3 The system shall provide the capability to create a new template based on a group of records
 - ERA6.4.4 The system shall support capability of providing model templates
 - ERA6.4.4.1 The system shall provide the capability to create a new template based on a model
- ERA6.5 The system shall provide for the approval of templates
- ERA6.6 The system shall validate templates
 - ERA6.6.1 The system shall validate templates according to user supplied validation rules
 - ERA6.6.2 The system shall validate templates to ensure their functionality
 - ERA6.6.2.1 The system shall provide results of template validation
 - ERA6.6.3 The system shall ensure that templates are well-formed
- ERA6.7 The system shall provide search capabilities for templates within the template repository
- ERA6.8 The system shall associate templates with defined domains
 - ERA6.8.1 The system shall provide the capability to associate templates with abstract classes of records
 - ERA6.8.2 The system shall provide the capability to associate templates with empirical classes of records
 - ERA6.8.3 The system shall provide the capability to associate templates with classes of transactions in the lifecycle management of records
 - ERA6.8.4 The system shall provide the capability to associate templates with digital data types
 - ERA6.8.5 The system shall provide the capability to associate templates with mappings of one data type to another
 - ERA6.8.6 The system shall support templates acting as superclasses of other templates
 - ERA6.8.7 The system shall support templates acting as subclasses of other templates
- ERA6.9 The system shall support associating templates with other system objects
 - ERA6.9.1 The system shall provide the capability to associate records with templates in the template repository

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- ERA6.9.2 The system shall support associating disposition agreements with templates
- ERA6.9.3 The system shall provide the capability to associate technical specifications for electronic records with templates in the template repository
- ERA6.9.4 The system shall support associating templates with transactions
- ERA6.9.5 The system shall support the capability for templates to reference other templates
- ERA6.10 The system shall support versioning of templates
- ERA6.11 The system shall support hierarchies of templates

ERA7 The system shall provide capabilities for preserving electronic records

- ERA7.1 The system shall manage the preservation process
 - ERA7.1.1 The system shall support preservation assessments of electronic records
 - ERA7.1.1.1 The system shall support preservation assessments of electronic records scheduled for transfer to NARA
 - ERA7.1.1.1.1 The system shall support preservation assessments of electronic records planned for transfer to NARA but not scheduled
 - ERA7.1.1.2 The system shall support preservation assessments of electronic records on ingest
 - ERA7.1.1.3 The system shall support preservation assessments of electronic records already stored in ERA
 - ERA7.1.1.4 The system shall support the application of templates in preservation assessment
 - ERA7.1.2 The system shall support scheduling the automatic execution of preservation processing
 - ERA7.1.3 The system shall provide the capability to transform records via a user interface
 - ERA7.1.4 The system shall support mass processing of groups of records
 - ERA7.1.4.1 The system shall support mass processing of groups of data files
 - ERA7.1.5 The system shall maintain an audit trail of all preservation processing
 - ERA7.1.5.1 The system shall include the preservation audit trail within the record lifecycle data
 - ERA7.1.6 The system shall preserve the authenticity of records in preservation processes
 - ERA7.1.6.1 The system shall ensure that record arrangements created in preservation processing can be materialized
 - ERA7.1.6.2 The system shall ensure that all data files stored in the system are associated with the records they constitute
 - ERA7.1.6.2.1 The system shall ensure that all data files stored in the system are associated with the sets of records they constitute
 - ERA7.1.6.3 The system shall maintain record content across preservation processes
 - ERA7.1.6.4 The system shall maintain record functionality across preservation processes
 - ERA7.1.6.5 The system shall maintain record context across preservation processes

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- ERA7.1.6.6 The system shall maintain record structure across preservation processes
- ERA7.1.6.7 The system shall maintain record presentation across preservation processes
- ERA7.2 The system shall support retaining data files in the formats in which they were ingested
 - ERA7.2.1 The system shall capture attributes of all ingested data files
 - ERA7.2.1.1 The system shall capture the identifiers of all ingested data files
 - ERA7.2.1.2 The system shall capture data types of all ingested data files
 - ERA7.2.2 The system shall specify the relationship of each ingested data file with an electronic record
 - ERA7.2.2.1 The system shall specify the relationship of each ingested data file with an aggregate of electronic records
- ERA7.3 The system shall provide the capability to migrate any ingested data file to a different format
 - ERA7.3.1 The system shall have the capability of verifying that a file output from a migration retains specified attributes of the input data
 - ERA7.3.1.1 The system shall have the capability of verifying that a file output from a migration retains specified behaviors of the input data
 - ERA7.3.2 The system shall specify the relationship of each migrated data file to an electronic record
 - ERA7.3.2.1 The system shall specify the relationship of each migrated data file to an aggregate of electronic records
- ERA7.4 The system shall provide the capability to transform records into persistent formats
 - ERA7.4.1 The system shall provide the capability to transform record/data types into a hardware and software independent format
 - ERA7.4.1.1 The system shall provide the capability to transform data types according to the requirements listed in the table entitled “ERA Supported Data Types”
 - ERA7.4.1.2 The system shall validate the results of transformations for conformance with assigned templates
 - ERA7.4.1.3 The system shall provide the capability to report the results of the transformations
 - ERA7.4.1.4 The system shall provide the capability to flag objects that have undergone incomplete transformations
 - ERA7.4.1.5 The system shall provide the capability to flag objects that have undergone incorrect transformations
- ERA7.5 The system shall store the files output from preservation processes
 - ERA7.5.1 The system shall store the files output from format migration
 - ERA7.5.2 The system shall store the files output from transformation to persistent format
- ERA7.6 The system shall support foreign language extensibility such that foreign language records may be preserved in the future without the need for major redesign

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Workflow

ERA8 The system shall provide workflow management capability

ERA8.1 The system shall invoke its services based on business rules

ERA8.1.1 The system shall provide functionality for defining business rules to the system.

ERA8.1.2 The system shall support mandatory approval as exit criteria for business processes

ERA8.1.3 The system shall provide the ability to alert users of upcoming events

ERA8.2 The system shall support the management of units of work

ERA8.2.1 The system shall support defining units of work

ERA8.2.2 The system shall support assigning groups of records to units of work

ERA8.2.3 The system shall provide the capability for queueing of units of work

ERA8.2.4 The system shall support the capability to suspend processing of units of work

ERA8.2.5 The system shall support the capability to resume processing of units of work that were suspended

ERA8.2.6 The system shall support tracking the status of units of work

ERA8.2.7 The system shall report on the processing status of units of work

ERA8.2.8 The system shall support defining timeframes for completion of units of work

ERA8.2.9 The system shall provide the status of a unit of work at completion

ERA8.3 The system shall provide for the management of workflows

ERA8.3.1 The system shall provide for the creation of workflows

ERA8.3.2 The system shall provide for the deletion of workflows

ERA8.3.3 The system shall support the integration of forms into workflows

ERA8.3.4 The system shall provide for the modification of workflows

ERA8.4 The system shall support the dynamic manipulation of workflows

ERA8.4.1 The system shall provide the capability for queueing of workflows

ERA8.4.2 The system shall provide the capability to suspend workflows

ERA8.4.3 The system shall provide the capability to resume a suspended workflow

ERA8.4.4 The system shall provide the capability to cancel a workflow

ERA8.4.5 The system shall provide the capability to adjust the priority of a workflow

ERA8.5 The system shall estimate resource requirements associated with a workflow

ERA8.5.1 The system shall make estimated resource requirements associated with a workflow available to external systems

ERA8.6 The system shall include the ability to prioritize any queue

ERA8.7 The system shall provide functionality to manage online forms

ERA8.7.1 The system shall provide functionality for users to create online forms

ERA8.7.2 The system shall provide users access to online forms

ERA8.7.3 The system shall provide functionality to validate online forms

ERA8.7.4 The system shall provide functionality for users to update online forms

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- ERA8.7.5 The system shall provide functionality for users to delete online forms
- ERA8.7.6 The system shall provide functionality to fill-in online forms
- ERA8.7.7 The system shall provide functionality to approve filled in forms
- ERA8.7.8 The system shall provide functionality to validate user supplied data on online forms
- ERA8.8 The system shall provide the ability to notify users about workflow processes
 - ERA8.8.1 The system shall provide the ability to attach notifications to workflows
 - ERA8.8.2 The system shall provide the ability to change notifications attached to workflows
 - ERA8.8.3 The systems shall provide the ability to delete notifications attached to workflows
- ERA8.9 The system shall provide the capability to assign tasks to users
 - ERA8.9.1 The system shall support queues of tasks
 - ERA8.9.2 The system shall support users viewing queues of tasks
 - ERA8.9.3 The system shall support users selecting items from queues of work assigned to them

Archival Storage

ERA9 The system shall store records reliably

- ERA9.1 The system shall provide the capability to store copies of records
 - ERA9.1.1 The system shall store records as transferred from the originating entity
 - ERA9.1.2 The system shall store a copy of the records produced as a result of preservation processing
 - ERA9.1.3 The system shall allow for the replacement of copies with new versions
 - ERA9.1.4 The system shall produce copies of all electronic holdings for off-site storage
- ERA9.2 The system shall provide for management of its electronic holdings
 - ERA9.2.1 The system shall support export of record bearing, self describing media from the ERA primary data storage repository
 - ERA9.2.2 The system shall support import of record bearing, self describing media into the ERA primary data storage repository
 - ERA9.2.3 The system shall provide the capability of recovering any electronic record in the event of catastrophic loss
 - ERA9.2.4 The system shall monitor the status of all ERA storage systems
 - ERA9.2.5 The system shall monitor the performance of all ERA storage systems
 - ERA9.2.6 The system shall support location-transparent access to electronic holdings
 - ERA9.2.7 The system shall maintain an inventory of all of the electronic record holdings
 - ERA9.2.7.1 The system shall provide reporting capability on inventory
 - ERA9.2.7.2 The system shall maintain an archive file directory defining the physical locations of all records within the system

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ERA9.2.7.3 The system shall provide the capability for recovering the archive file directory

ERA9.2.8 The system shall provide tracking capabilities for recording information about the movement of files

ERA9.2.9 The system shall provide the capability to verify the inventory of the archive against the archive file directory

ERA10 The system shall support automated media handling

ERA10.1 The system shall provide a physical media tracking system

ERA10.2 The system shall be capable of printing archive media identification labels

ERA10.3 The system shall support the automated access to electronic holdings stored on removable archive media

ERA11 The system shall provide media management

ERA11.1 The system shall provide the automated capability to migrate records to accommodate new technology

ERA11.2 The system shall not modify records to accommodate physical storage media

ERA11.3 The system shall use storage media that is self-describing

ERA11.4 The system shall provide tools for recovery of records from failed media

ERA11.5 The system shall store records such that an individual record does not span media volumes

ERA11.6 The system shall provide active safeguards to protect against archive media degradation

ERA11.7 The system shall statistically monitor the raw bit error rate (BER) of storage media in the archive

ERA11.8 The system shall statistically monitor the corrected bit error rate (BER) of storage media in the archive

ERA11.9 The system shall manage refreshing of archive media

ERA11.10 The system shall manage copying of archive media

ERA11.11 The system utilize archive media that shall be capable of being manually mounted

Security

ERA12 The system shall manage security for electronic records

ERA12.1 The system shall have the capability to manage records according to the sensitivity of the record

ERA12.2 The system shall have the capability of managing records according to the ownership of the record

ERA12.3 The system shall have the capability to recognize the sensitivity designation of records as applied by the originating entity

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ERA12.4 The system shall have the capability to automatically parse the content of records and make a recommendation as to their level of sensitivity

ERA12.4.1 The system shall recognize the following sensitivity levels: Sensitive, potentially sensitive, non-sensitive, unknown sensitivity

ERA12.5 The system shall segregate records based on sensitivity

ERA12.5.1 The system shall separate incoming records of undetermined sensitivity from the rest of ERA holdings until the sensitivity of the incoming records can be determined

ERA12.5.2 The system shall store records that have been flagged as “possibly sensitive” in a separate area pending review

ERA12.6 The system shall process records in environments appropriate to their stated sensitivity

ERA12.7 The system shall prohibit unauthorized alteration of records

ERA12.8 The system shall prohibit unauthorized alteration of system data

ERA12.9 The system shall support non-repudiation at the record level

ERA12.10 The system shall store records in a non-encrypted state

ERA12.11 The system shall provide for configurable data access control schemes

ERA12.11.1 The system shall assign access control privileges according to a user’s identity

ERA12.11.2 The system shall support user group access control

ERA12.11.3 The system shall determine a user’s identity through the use of strong authentication technology

ERA12.11.4 The system shall control access to records according to sensitivity

ERA12.11.5 The system shall control access to records according to ownership rights

ERA13 The system shall provide security for itself

ERA13.1 The system shall provide for intrusion detection

ERA13.1.1 The system shall identify all instances of attempted intrusions

ERA13.1.2 The system shall identify all instances of successful intrusions

ERA13.1.3 The system shall prevent unauthorized system access

ERA13.2 The system shall provide for intrusion deterrence

ERA13.3 The system shall provide for data confidentiality of all sensitive information that is exchanged between the system and any external system

ERA13.4 The system shall support virus detection

ERA13.5 The system shall support virus elimination

ERA13.6 The system shall operate in accordance with applicable security guidance and rules

ERA13.6.1 The system shall operate in accordance with the Computer Security Act of 1987

ERA13.6.2 The system shall operate in accordance with the Government Information Security Reform Act of 2000

ERA13.6.3 The system shall operate in accordance with the NARA Policy Directive, NARA 804, Information Technology Systems Security handbook

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ERA13.7 The system shall employ strong authentication techniques when exchanging data with external systems

ERA13.8 The system shall provide for backup of ERA

ERA13.8.1 The system shall support the backup of all COTS products files required to re-establish ERA

ERA13.8.2 The system shall support the backup of all application files required to rebuild ERA

ERA13.8.3 The system shall support the backup of all configuration support files required to rebuild ERA

ERA13.9 The system shall control access to services based on user privileges

ERA13.9.1 The system shall control access to service privileges according to Boolean combinations of group membership that are defined by NARA

ERA13.10 The system shall control access to record lifecycle data based on a user's access privileges

ERA13.11 The system shall support changes to a user's access privileges

ERA13.12 The system shall support associating user privilege sets with sets of records

ERA13.12.1 The system shall support a user being a member of multiple groups

ERA13.12.2 The system shall support changes to access privileges for an entire group of users

ERA13.13 The system shall provide for recovery of ERA

ERA13.13.1 The system shall support recovery of all COTS products files required to re-establish ERA

ERA13.13.2 The system shall support recovery of all application files required to re-establish ERA

ERA13.13.3 The system shall support recovery of all configuration support files required to re-establish ERA

Ingest

ERA14 The system shall support transfer of electronic records to ERA

ERA14.1 The system shall accept electronic records transferred via physical media

ERA14.2 The system shall provide the capability to accept transfers electronically

ERA14.2.1 The system shall support a NARA-initiated transfer mechanism

ERA14.2.2 The system shall support originating entity initiated transfers

ERA14.3 The system shall confirm the integrity of the transfer

ERA14.3.1 The system shall report discrepancies found with the integrity of the transfer

ERA14.3.2 The system shall apply EDAC (Error Detection and Correction) technology to transfers

ERA14.4 The system shall use templates to verify the transfer contained what was expected

ERA14.5 The system shall provide for the verification of all supported record types

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- ERA14.5.1 The system shall use templates to verify the integrity of transferred records
- ERA14.6 The system shall provide for the transfer of sample records
- ERA14.7 The system shall provide access to transfers of sample records
- ERA14.8 The system shall record the sample records review decision
- ERA14.9 The system shall dispose of sample records
 - ERA14.9.1 The system shall provide the capability to destroy sample records
 - ERA14.9.2 The system shall provide the capability to return sample records to the originating entity
- ERA14.10 The system shall provide the capability to use sample records as test cases
- ERA14.11 The system shall verify sample records
 - ERA14.11.1 The system shall produce verification reports for sample records
 - ERA14.11.2 The system shall be capable of verifying sample records against templates

Access

ERA15 The system shall provide for access review of electronic records

- ERA15.1 The system shall provide the capability to assist in review determinations
 - ERA15.1.1 The system shall provide the capability to identify differences in access review determinations applied to copies of the same record
 - ERA15.1.2 The system shall provide the capability to identify differences in classification applied to copies of the same record
 - ERA15.1.3 The system shall provide the capability to recognize sensitive records
 - ERA15.1.4 The system shall notify the access reviewer of the existence of sensitive records
 - ERA15.1.5 The system shall provide the capability to assist in determining whether the same records have been released previously
 - ERA15.1.6 The system shall provide the capability to assist in determining whether the same information has been released previously
 - ERA15.1.7 The system shall provide a reference capability containing statutes and guidance relevant to the access review process
- ERA15.2 The system shall capture the results of the access review
 - ERA15.2.1 The system shall capture the review determination
 - ERA15.2.2 The system shall capture the reason for the review determination
 - ERA15.2.3 The system shall link the review determination to the affected record
- ERA15.3 The system shall produce notifications that additional reviewers need to perform a review
- ERA15.4 The system shall support changing a review determination over time
 - ERA15.4.1 The system shall display the review determination history of a record upon request
- ERA15.5 The system shall support declassification of electronic holdings
 - ERA15.5.1 The system shall capture declassification information
- ERA15.6 The system shall manage review determinations

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- ERA15.6.1 The system shall support defining new review determinations
- ERA15.6.2 The system shall support updating available review determinations
- ERA15.6.3 The system shall support deleting available review determinations
- ERA15.6.4 The system shall support a review determination of “withdraw”
- ERA15.6.5 The system shall support a review determination of “release - partial”
- ERA15.6.6 The system shall support a review determination of “release - full”
- ERA15.6.7 The system shall support a review determination of “redact”
- ERA15.6.8 The system shall support a review determination of “withhold”
 - ERA15.6.8.1 The system shall provide the capability to create a placeholder for withheld records indicating reasons for withholding

ERA16 The system shall provide for redaction of electronic holdings

- ERA16.1 The system shall provide the capability for the user to produce redacted versions of electronic holdings
 - ERA16.1.1 The system shall manage redacted versions of records
 - ERA16.1.2 The system shall provide the capability to change the appearance of the redacted version of a record
- ERA16.2 The system shall create a copy of the record for redaction
- ERA16.3 The system shall prohibit redaction of any digital file maintained for preservation
 - ERA16.3.1 The system shall prohibit redaction of any record component maintained for preservation
- ERA16.4 The system shall provide the capability to capture redaction information
 - ERA16.4.1 The system shall capture reason(s) for redaction
 - ERA16.4.2 The system shall capture the identity of the individual who performed the redaction
 - ERA16.4.3 The system shall capture the date of the redaction
- ERA16.5 The system shall support redaction of supported record types
- ERA16.6 The system shall provide tools for automated redaction of records
- ERA16.7 The system shall have the capability to display the disposition agreement for the record being redacted
- ERA16.8 The system shall provide a means to identify the redacted versions of records

ERA17 The system shall provide the capability to search for electronic records

- ERA17.1 The system shall provide the capability to search for archival descriptions
- ERA17.2 The system shall provide the ability to search for records based on the contents of the records
- ERA17.3 The system shall provide the capability to search through heirarchies of information
 - ERA17.3.1 The system shall provide the capability to navigate from a description to an individual record.

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- ERA17.3.2 The system shall provide the capability to navigate from an individual record to an associated archival description
- ERA17.3.3 The system shall provide the capability to navigate through all levels of descriptive information
- ERA17.3.4 The system shall provide the capability to navigate through all levels of aggregation of records
- ERA17.3.5 The system shall provide the capability to search within attachments
- ERA17.4 The system shall provide the ability to search all types of electronic records
- ERA17.5 The system shall provide for the user selecting the characteristics of the search
 - ERA17.5.1 The system shall provide for the user to enter the criteria for the search
 - ERA17.5.2 The system shall provide the capability to search by geographic information
 - ERA17.5.3 The system shall provide the capability to search by subject
 - ERA17.5.4 The system shall provide the capability to search by time period
 - ERA17.5.5 The system shall provide the capability to search by accession number
 - ERA17.5.6 The system shall provide the capability to search by originating entity
 - ERA17.5.7 The system shall provide the capability to search by government function
 - ERA17.5.8 The system shall provide the capability to search by government line of business
 - ERA17.5.9 The system shall provide the capability to search by record type
 - ERA17.5.10 The system shall provide the capability to search by geospatial identifiers
 - ERA17.5.11 The system shall provide the capability to search by topic
 - ERA17.5.12 The system shall provide the capability to search by media type
 - ERA17.5.13 The system shall provide the capability to search by record format
 - ERA17.5.14 The system shall provide the capability to search descriptions by description unique identifier
 - ERA17.5.15 The system shall support keyword searching
 - ERA17.5.16 The system shall support key phrase searching
 - ERA17.5.17 The system shall support searches for specified data sets
 - ERA17.5.18 The system shall support concept-based searching
 - ERA17.5.19 The system shall support Boolean searching
 - ERA17.5.20 The system shall support proximity searching
 - ERA17.5.21 The system shall support searching based on the frequency of access to records by other researchers doing similar searches
 - ERA17.5.22 The system shall support automated question-and-answer searching based on searches performed frequently
- ERA17.6 The system shall provide NARA-created default searches
 - ERA17.6.1 The system shall provide the capability for the user to select a NARA default search from among available searches
 - ERA17.6.2 The system shall run the user-selected NARA default search
 - ERA17.6.3 The system shall support searching among only the most frequently accessed records
- ERA17.7 The system shall provide user-selectable search complexity levels
- ERA17.8 The system shall provide for the control of search run times

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- ERA17.8.1 The system shall limit search run times in a pre-emptive manner
- ERA17.8.2 The system shall provide the capability to adjust search run time limits
- ERA17.9 The system shall provide information to the user while the search is in progress
 - ERA17.9.1 The system shall provide a search progress indicator
 - ERA17.9.2 The system shall display the search parameters selected by the user
 - ERA17.9.3 The system shall provide an estimate to the user of how long the search will take to execute
 - ERA17.9.4 The system shall notify the user that the search is complete
- ERA17.10 The system shall present the search results set to the user
 - ERA17.10.1 The system shall display a search results set that includes all records meeting the search criteria
 - ERA17.10.2 The system shall display an explanation for the reason for withholding records
 - ERA17.10.3 The system shall exclude from display records whose existence can not be disclosed to the requesting user
 - ERA17.10.4 The system shall display the total number of results in the result set returned by the search
 - ERA17.10.5 The system shall allow the user to select the quantity of search results to be presented in the results set
 - ERA17.10.6 The system shall provide the capability to select the order in which the result set is presented
 - ERA17.10.7 The system shall provide the capability to rank the search results set by relevance
 - ERA17.10.8 The system shall present the search results set at user-selectable levels of detail
- ERA17.11 The system shall provide the capability for a user to refine a search
 - ERA17.11.1 The system shall provide a "more like this" capability to search for more records similar to those returned by the search
 - ERA17.11.2 The system shall support the capability to refine searches based on authority sources
- ERA17.12 The system shall provide the capability for the user to select the records they wish to access from among the search results set
- ERA17.13 The system shall provide the capability to save a search
 - ERA17.13.1 The system shall provide the capability for the user to select a saved search from their saved searches
 - ERA17.13.2 The system shall provide the capability to run a saved search
- ERA17.14 The system shall provide the capability for users to store results sets over time
 - ERA17.14.1 The system shall provide the capability for the search results to be stored
 - ERA17.14.2 The system shall provide the capability to save selected portions of results sets
 - ERA17.14.3 The system shall maintain a search results set for a specified period of time
- ERA17.15 The system shall manage mediated searches
 - ERA17.15.1 The system shall provide the capability to request a mediated search

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ERA17.15.2 The system shall support the capability for mediated searchers to dialog with search requestors about the mediated search

ERA17.15.3 The system shall provide the capability to manage mediated request responses

ERA17.15.4 The system shall provide the capability to prioritize mediated searches

ERA18 The system shall provide access to electronic holdings

ERA18.1 The system shall be capable of electronically presenting all record types

ERA18.2 The system shall provide the capability for users to request copies of records

ERA18.3 The system shall be capable of outputting copies of all record types to media

ERA18.3.1 The system shall be capable of outputting all electronic records to digital media

ERA18.3.2 The system shall be capable of printing all printable electronic record types

ERA18.4 The system shall provide access to holdings independently of the hardware with which they were created

ERA18.5 The system shall provide access to holdings independently of the software with which they were created

ERA18.5.1 The system shall provide the capability to output holdings independently of the software with which they were created

ERA18.5.2 The system shall provide the capability to electronically present holdings independently of the software with which they were created

ERA18.6 The system shall provide the capability to access an entire record

ERA18.7 The system shall provide the capability to access a group of records

ERA18.8 The system shall provide the capability to access a portion of a record

ERA18.9 The system shall provide the capability to access all digital components of a record

ERA18.10 The system shall provide the capability to output electronic holdings in data formats selected by the user from available choices

ERA18.10.1 The system shall support the user selecting the output format of selected records from among available formats

ERA18.10.2 The system shall output certified copies of electronic records in formats selectable by the user from available choices

ERA18.10.3 The system shall output certified copies of electronic records on media selectable by the user from available choices

ERA18.10.4 The system shall provide the capability to output selected digital formats via telecommunications

ERA18.11 The system shall maintain the integrity of the record during output

ERA18.11.1 The system shall maintain record content during output

ERA18.11.2 The system shall maintain record functionality during output

ERA18.11.3 The system shall maintain record context during output

ERA18.11.4 The system shall maintain record structure during output

ERA18.11.5 The system shall maintain record presentation during output

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- ERA18.11.6 The system shall be capable of rendering components of a record individually
- ERA18.11.7 The system shall be capable of rendering a record composed of multiple components
- ERA18.12 The system shall print address labels for media orders
- ERA18.13 The system shall print packing lists for media orders

User Interface

ERA19 The system shall provide electronic access to its services

- ERA19.1 The system shall be accessed according to the protocols described in NARA's Target Architecture
- ERA19.2 The system shall integrate with NARA's Target Architecture
- ERA19.3 The system shall adhere to NARA's Enterprise Architecture approach for security of access

ERA20 The system shall provide a user interface

- ERA20.1 The system shall provide default workbenches for users roles
 - ERA20.1.1 The system shall display the appropriate default workbench based on a users registration information
- ERA20.2 The system shall support the user's ability to customize the workbenches
 - ERA20.2.1 The system shall provide the user the ability to customize the user interfaces by adding tools to the default workbench
 - ERA20.2.2 The system shall provide the user the ability to customize the user interfaces by removing tools from the default workbench
 - ERA20.2.3 The system shall provide the user the ability to customize the appearance of the workbench
- ERA20.3 The system shall accept input of information by users
 - ERA20.3.1 The system shall validate information entered by users
- ERA20.4 The system shall allow users to select among available workbenches
- ERA20.5 The system shall maintain workbench configuration across user sessions
- ERA20.6 The system shall provide for configurable user interfaces
- ERA20.7 The system shall provide for foreign language extensibility such that the user interface could contain foreign language text in the future without major redesign
- ERA20.8 The system shall contain a user interface capable of instantiating supported types of electronic records

Administration

ERA21 The system shall provide for user registration

- ERA21.1 The system shall register users

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- ERA21.1.1 The system shall register user types
- ERA21.1.2 The system shall associate registered users with user groups
- ERA21.1.3 The system shall establish a user account for each registered user
- ERA21.2 The system shall collect information from the user during registration
 - ERA21.2.1 The system shall collect name from the user during registration
 - ERA21.2.2 The system shall collect contact information from the user during registration
 - ERA21.2.3 The system shall collect security clearance information from the user during registration
 - ERA21.2.4 The system shall collect information on whether the user is a stakeholder in an equity agency from the user during registration
 - ERA21.2.5 The system shall collect job role information from the user during registration
 - ERA21.2.6 The system shall collect proof of identity information from the user during registration
- ERA21.3 The system shall manage user accounts
 - ERA21.3.1 The system shall provide the capability to create user accounts
 - ERA21.3.2 The system shall provide the capability to create user accounts automatically
 - ERA21.3.3 The system shall provide the capability to read user accounts
 - ERA21.3.4 The system shall provide the capability to update user accounts
 - ERA21.3.5 The system shall provide the capability to delete user accounts
 - ERA21.3.6 The system shall provide the capability to suspend user accounts
 - ERA21.3.7 The system shall provide the capability to reactivate suspended user accounts
 - ERA21.3.8 The system shall provide for the renewal of user registrations
 - ERA21.3.9 The system shall expire user accounts
 - ERA21.3.10 The system shall provide users the ability to cancel their accounts
 - ERA21.3.11 The system shall provide users the ability to update their account information

ERA22 The system shall provide user assistance

- ERA22.1 The system shall manage user assistance
 - ERA22.1.1 The system shall support creating user assistance functions
 - ERA22.1.2 The system shall provide access to user assistance functions
 - ERA22.1.3 The system shall support updating user assistance functions
 - ERA22.1.4 The system shall support deleting user assistance functions
- ERA22.2 The system shall provide help screens
- ERA22.3 The system shall provide help desk support functions
- ERA22.4 The system shall provide the capability for user training
 - ERA22.4.1 The system shall support simulated user sessions
 - ERA22.4.2 The system shall support simulated administrator sessions
- ERA22.5 The system shall support linking to NARA resources from within ERA

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ERA22.6 The system shall support defining specific user assistance products to specific groups of users

ERA22.7 The system shall provide the functionality to guide users through the steps of an ERA process step-by-step

ERA22.8 The system shall provide users with the capability to initiate a message requesting assistance to NARA staff member(s) from within ERA.

ERA23 The system shall support communications with users

ERA23.1 The system shall manage communications

ERA23.1.1 The system shall provide the capability to receive communications

ERA23.1.2 The system shall provide the capability to track communications

ERA23.1.3 The system shall provide the capability to categorize communications

ERA23.1.4 The system shall provide the capability to respond to communications

ERA23.1.5 The system shall provide the capability to prioritize communications

ERA23.2 The system shall provide the capability for dialogue between NARA and users

ERA23.3 The system shall manage FOIA requests

ERA23.4 The system shall notify users of system events

ERA23.4.1 The system shall provide the ability to notify users about scheduled system maintenance

ERA23.4.2 The system shall provide the ability to notify users about delayed response time

ERA23.4.3 The system shall notify users when system services are affected by system events

ERA23.4.4 The system shall notify users when system resources are affected by system events

ERA23.5 The system shall provide the capability to generate notices for external systems

ERA23.6 The system shall generate notices to users

ERA23.6.1 The system shall provide the capability to notify an originating entity of the results of system events

ERA23.6.2 The system shall provide the capability to notify a list of users regarding system events

ERA23.6.3 The system shall provide the capability to notify users of the progress of system events

ERA23.6.4 The system shall notify users when they have been denied access to materials

ERA23.7 The system shall provide the ability for users to manage notices

ERA23.7.1 The system shall provide the capability to manage standard language notices

ERA23.7.2 The system shall provide the capability to manage ad hoc notices

ERA23.7.3 The system shall provide the capability for users to create notices

ERA23.7.4 The system shall provide the capability for users to save notices

ERA23.7.5 The system shall provide the capability for users to edit notices

ERA23.7.6 The system shall provide the capability for users to delete notices

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ERA23.7.7 The system shall provide the capability for users to specify recipients of notices

ERA23.7.8 The system shall provide the capability for users to send notices

ERA24 The system shall maintain an event log

ERA24.1 The system shall support logging of all system events

ERA24.2 The system shall support NARA selecting which information to log in the event log

ERA24.3 The system shall support NARA defining categories of event log information

ERA24.4 The system shall support NARA defining the retention period for categories of event log information

ERA24.4.1 The system shall support archiving of event log information

ERA24.5 The system shall make event log information available upon request

ERA24.5.1 The system shall be capable of providing event log information for specific electronic records

ERA24.6 The system shall have the capability to completely expunge event log information

ERA24.6.1 The system shall have the capability to completely expunge event log information pertaining to an individual record from the event log

ERA24.6.2 The system shall have the capability to completely expunge event log information pertaining to groups of records from the event log.

ERA24.7 The system shall manage records created by itself

ERA25 The system shall provide reporting capability

ERA25.1 The system shall provide the ability to manage reports

ERA25.1.1 The system shall provide the ability to create reports

ERA25.1.2 The system shall provide the ability to modify reports

ERA25.1.3 The system shall provide the ability to save reports

ERA25.1.4 The system shall provide the ability to delete reports

ERA25.2 The system shall provide the ability to select a report

ERA25.3 The system shall provide the ability to select report contents

ERA25.3.1 The system shall provide the ability to include any log event in a report

ERA25.3.2 The system shall provide the ability to include the results of any system service in a report

ERA25.3.3 The system shall provide the ability to include records in a report

ERA25.3.4 The system shall provide the ability to combine report contents

ERA25.3.5 The system shall provide the ability to customize report formats

ERA25.3.6 The system shall provide the ability to graphically represent report results

ERA25.3.7 The system shall provide the ability to present report results in tables

ERA25.4 The system shall provide the ability to output report results

ERA25.4.1 The system shall provide reports via media

ERA25.4.2 The system shall provide reports via the user interface

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ERA25.4.3 The system shall provide the ability to output reports to external systems
ERA25.5 The system shall provide the ability to make reports available to other users

ERA26 The system shall provide systems administration capabilities

ERA26.1 The system shall provide tools to support system level testing

ERA26.1.1 The system shall support the designation of test data

ERA26.1.2 The system shall support complete deletion of test data from the system without affecting other data

ERA26.1.3 The system shall support tracking of designated test data throughout the system

ERA26.1.4 The system shall support complete deletion of system artifacts resulting from testing from the system without affecting other data

ERA26.1.5 The system shall provide monitoring capability during testing

ERA26.2 The system shall manage system failures

ERA26.2.1 The system shall identify failures

ERA26.2.2 The system shall isolate failures

ERA26.2.3 The system shall resolve failures

ERA26.2.4 The system shall provide notification of failures

ERA26.2.5 The system shall provide consolidated application error logging

ERA26.2.6 The system shall provide consolidated COTS fault logging

ERA26.3 The system shall monitor overall system state in a consolidated manner

ERA26.3.1 The system shall monitor system workflow

ERA26.3.2 The system shall monitor system load

ERA26.3.3 The system shall monitor system performance

ERA26.3.4 The system shall monitor storage usage

ERA26.3.5 The system shall monitor data requests

ERA26.3.6 The system shall present system monitoring data via a consistent operations user interface

ERA26.4 The system shall provide the capability to adjust system parameters

ERA26.4.1 The system shall adjust storage allocations

ERA26.4.2 The system shall balance system loads

ERA26.4.3 The system shall allocate resources

ERA26.4.4 The system shall deallocate resources

ERA26.4.5 The system shall report resources usage

ERA26.4.6 The system shall be capable of taking resources off line

ERA26.4.7 The system shall be capable of bringing resources on line

ERA26.4.8 The system shall present the system parameter controls via a consistent operations user interface

ERA27 The system shall provide logistics management capabilities

ERA27.1 The system shall provide inventory management

ERA27.1.1 The system shall provide spare parts inventory management

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- ERA27.1.1.1 The system shall support monitoring of the spare parts inventory
- ERA27.1.1.2 The system shall support management of the replenishment of the spare parts inventory
- ERA27.1.2 The system shall provide consumables inventory management
 - ERA27.1.2.1 The system shall support monitoring of all the consumables inventories for ERA operations
 - ERA27.1.2.2 The system shall support management of the replenishment of the consumables inventories
- ERA27.1.3 The system shall provide for management of a system-wide inventory of all hardware contained within ERA
- ERA27.1.4 The system shall provide for management of a system-wide inventory of all software contained within ERA
- ERA27.2 The system shall provide configuration management capabilities
 - ERA27.2.1 The system shall provide configuration management capabilities for the operational hardware of ERA
 - ERA27.2.2 The system shall provide configuration management capabilities for the archival software of ERA
 - ERA27.2.3 The system shall provide configuration management capabilities for the system software of ERA
 - ERA27.2.4 The system shall support the migration of hardware upgrades into the operational environment
 - ERA27.2.5 The system shall support the migration of software upgrades into the operational environment
 - ERA27.2.6 The system shall provide configuration management capabilities to support the testing of ERA
- ERA27.3 The system shall support the scheduling of required preventative maintenance for system components

System Characteristics

ERA28 The system shall accept all types of electronic records

- ERA28.1 The system shall accept all electronic record types
- ERA28.2 The system shall support records that are composed of more than one component
 - ERA28.2.1 The system shall retain the relationships between the components of a record

ERA29 The system shall manage user subscriptions to services

- ERA29.1 The system shall provide for management of user subscriptions
 - ERA29.1.1 The system shall provide the user the capability to create subscriptions
 - ERA29.1.2 The system shall provide the user the capability to modify subscriptions
 - ERA29.1.3 The system shall provide the user the capability to delete subscriptions

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- ERA29.1.4 The system shall provide the user the capability to suspend subscriptions
- ERA29.1.5 The system shall provide the user the capability to resume suspended subscriptions
- ERA29.1.6 The system shall allow the System Administrator to execute all subscription management functions on behalf of the user
- ERA29.2 The system shall allow subscription processing to be managed independently of other system performance functions
- ERA29.3 The system shall allow for any combination of services to be executed in response to any combination of events
- ERA29.4 The system shall support executing a particular subscription a user selectable number of times after which it is deleted from the system
- ERA29.5 The system shall support subscriptions that are time based
 - ERA29.5.1 The system shall support subscriptions that execute at a specific future time
 - ERA29.5.2 The system shall support subscriptions that execute at specified intervals

ERA30 The system shall provide service management

- ERA30.1 The system shall provide service queuing
- ERA30.2 The system shall provide service monitoring
- ERA30.3 The system shall be capable of categorizing services
- ERA30.4 The system shall provide service prioritization
 - ERA30.4.1 The system shall provide for prioritization between different categories of services
 - ERA30.4.2 The system shall provide for prioritization of individual service executions within a category of service
- ERA30.5 The system shall provide service preempting
- ERA30.6 The system shall provide service suspension
 - ERA30.6.1 The system shall provide for suspension of a service at the category level
 - ERA30.6.2 The system shall provide for suspension of individual service executions within a category of service
 - ERA30.6.3 The system shall provide service resumption of any type of service that has been suspended
 - ERA30.6.4 The system shall provide service resumption of any level of service that has been suspended
- ERA30.7 The system shall provide the capability to limit service execution
 - ERA30.7.1 The system shall limit individual service execution run times in a pre-emptive manner
 - ERA30.7.2 The system shall provide capability to adjust service execution run time limits
- ERA30.8 The system shall provide check-pointing
 - ERA30.8.1 The system shall reliably store check-pointed system state information sufficient for full system state recovery

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- ERA30.8.2 The system shall provide for the recovery from a check-pointed point in time
- ERA30.9 The system shall provide for all services to be eligible for fee bearing status

ERA31 The system shall meet or exceed specified performance requirements=

- ERA31.1 The system shall accommodate loads as specified in the ERA Record Volume Requirements table B-2
- ERA31.2 The system shall be scalable to one exabyte of total storage without major design changes
- ERA31.3 The system shall be scalable to ten teraobjects without major design changes

ERA32 The system shall meet or exceed specified availability requirements

- ERA32.1 The system shall meet or exceed availability requirements as specified in the ERA Availability Requirements table B-1
- ERA32.2 The system shall have no single point of failure in the design

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4.0 ERA Functionality By Increment

This table indicates the increment during which each requirement is expected to be satisfied.

Requirement Number	Increment 1			Increment 2			Increment 3			Increment 4			Increment 5		
	M	P	F	M	P	F	M	P	F	M	P	F	M	P	F
ERA1		X				X									
ERA2	X				X				X						
ERA3		X				X									
ERA4		X				X									
ERA5		X				X									
ERA6		X				X									
ERA7		*				*		*			*				*
ERA8		X			X				X						
ERA9		X				X									
ERA10				X				X				X			
ERA11		X				X									
ERA12			X												
ERA13			X												
ERA14		X			X				X						
ERA15				X				X				X			
ERA16				X				X				X			
ERA17		X			X				X						
ERA18		X				X									
ERA19			X												
ERA20	X				X				X						
ERA21			X												
ERA22		X			X				X						
ERA23	X				X				X						
ERA24			X												
ERA25	X				X				X						
ERA26		X				X									
ERA27		X				X									
ERA28			X												
ERA29				X				X				X			
ERA30	X			X			X								
ERA31		*			*			*			*				*
ERA32			X												

Table 4-1: ERA Functionality by Increment

M = Minimal

P = Partial

F = Full

* - See Requirements table in Appendix B for further details

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Appendix A - Requirements Document Level 0 Requirements & NARA Strategic Goals Mapping

NARA Strategic Goals:

One: Essential evidence will be created, identified, appropriately scheduled, and managed for as long as needed. (SG1)

Two: Essential evidence will be easy to access regardless of where it is or where users are for as long as needed. (SG2)

Three: All records will be preserved in an appropriate environment for use as long as needed. (SG3)

Four: NARA's capabilities for making changes necessary to realize our vision will continuously expand. (SG4)

Level 0 Requirement	SG1	SG2	SG3	SG4
ERA1: Provide for the disposition of electronic records	✓		✓	
ERA2: Support management of arrangements of electronic records	✓	✓		
ERA3: Provide for archival descriptions	✓	✓		
ERA4: Manage authority sources	✓	✓	✓	
ERA5: Provide for the management of record lifecycle data	✓		✓	
ERA6: Provide for the management of templates	✓	✓	✓	
ERA7: Provide capabilities for preserving electronic records			✓	
ERA8: Provide workflow management capability	✓	✓	✓	✓
ERA9: Store records reliably			✓	
ERA10: Support automated media handling		✓	✓	
ERA11: Provide media management	✓		✓	
ERA12: Manage security for electronic records	✓		✓	
ERA13: Provide security for itself	✓			✓
ERA14: Support transfer of electronic records to ERA	✓		✓	
ERA15: Provide for access review of electronic records	✓	✓		
ERA16: Provide for redaction of electronic holdings	✓	✓		
ERA17: Provide the capability to search for electronic records		✓		

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Level 0 Requirement	SG1	SG2	SG3	SG4
ERA18: Provide access to electronic holdings		✓		
ERA19: Provide electronic access to its services		✓		
ERA20: Provide a user interface		✓		
ERA21: Provide for user registration		✓		✓
ERA22: Provide user assistance		✓		✓
ERA23: Support communications with users		✓		✓
ERA24: Maintain an event log				✓
ERA25: Provide reporting capability	✓	✓	✓	
ERA26: Provide systems administration capabilities				✓
ERA27: Provide logistics management capabilities				✓
ERA28: Accept all types of electronic records	✓		✓	
ERA29: Manage user subscriptions to services				✓
ERA30: Provide service management				✓
ERA31: Meet or exceed specified performance requirements	✓	✓	✓	✓
ERA32: Meet or exceed specified availability requirements		✓		✓

Table A-1: ERA Requirements and Strategic Goal Mapping

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Appendix B – Requirements Tables

Availability is the ratio of time that a service is available to the total time of system operation. As availability is a statistical calculation, mean times are used. Availability takes into account Mean Time to Repair (MTTR) and Mean Time to Failure rates (MTTF). $\text{Availability} = \text{MTTF}/(\text{MTTF} + \text{MTTR})$.

Table B-1, ERA Availability Requirements, imposes graduated availability requirements on the provision of ERA services and functional features.

ERA Service or Feature	Average Total Loss of Service per Year in Hours (FYI)	Availability
Access System via Electronic Interface	1	99.99%
System Request Acknowledgement - {Acknowledge request has been received even if service is not available at the time}	1	99.99%
Search Electronic Holdings	6	99.93%
Access Electronic Holdings	24	99.86%
User Communications	24	99.86%
Ingest - Human Aided Submission	24	99.86%
Media Distribution	40	99.54%
Ingest - Automated Submission	48	99.45%
Support Functions - {Redaction; Description of Holdings; Perform Access Review; Coordinate Templates; Coordinate Dispositions; User Registration}	48	99.45%

Table B-1: ERA Availability Requirements

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Table B-2, ERA Record Volume Requirements, provides requirements concerning ingest, accumulated archive volumes, and concurrent number of users for the ERA system over time.

Final/Initial Operating Capability	IOC	INC 2	INC 3	INC 4	FOC*
Total Archive Volume (TB)	129	219	345	538	83,000
Yearly Ingest Volume (TB)					
- Electronic	60	66	83	140	40,000
- Physical Media	22	24	43	60	2,000
Yearly Distribution Volume (TB)					
- Electronic	120	132	166	280	70,000
- Physical Media	44	48	86	120	14,000
Concurrent Number of Users**	350	400	500	600	1200

* *FOC is specified to encompass increasing capabilities and volumes from contract award + 15 years*

** *Performance specifications called out in Table A-3 to be maintained under increasing number of users*

Table B-2: ERA Record Volume Requirements

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Table B-3, ERA System Performance Requirements, lists requirements for peak system load capacity, expressed in number of operations per hour, and system response requirements for specific operations, in seconds.

Category	Number of Operations per Hour	Specific Operation	Response Time***
Log-on and authorization	1/3 of the total number of supported concurrent users	Account confirmation and authorization	5 sec
Description Search	8 times the total number of supported concurrent users	Single attribute search within descriptions	4 sec
	5 times the total number of supported concurrent users	Multiple attribute search within descriptions	7 sec
	2 times the total number of supported concurrent users	Advanced (e.g., concept based and proximity) search methods within descriptions	30 sec
Record Search	8 times the total number of supported concurrent users	Single attribute search of Records	4 sec
	5 times the total number of supported concurrent users	Multiple attribute search of Records	7 sec
	2 times the total number of supported concurrent users	Advanced (e.g., concept based and proximity) search methods of Records	30 sec
Media Distribution	1/10 of the total number of supported concurrent users	Order submission and confirmation	15 sec
Status Check (account or request)		Status of pending record order, subscriptions status, or account review	10 sec

*** From initiation of query to start of display, exclusive of user environment and network delay. System is assumed to contain 1,500,000 records and associated descriptions.

Table B-3: ERA System Performance Requirements

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Table B-4, ERA Supported Data Types, provides a list of supported data types and the development increment in which the capability to perform full preservation processing for each data type will become available.

	Increment 1	Increment 2	Increment 3	Increment 4	FOC
Data Types to be supported for full preservation processing	TBD	TBD	TBD	TDB	TBD

Table B-4: ERA Supported Data Types

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Appendix C – Glossary of Terms

Term	Definition
Accession	The activities surrounding NARA taking legal custody of records. This usually consists of filling out and signing of a particular form (electronic or hard copy) which transfers legal custody of records from the originating entity to NARA (as opposed to transfer and/or ingest, which involves taking physical custody). When used as a noun, it refers to the records covered by an instance of the activity of accessioning.
Authority Source	A list containing standardized information (e.g., acronyms, abbreviations, names, and phrases) used to ensure that a person, place, thing, event, or concept is consistently referred to using the same terminology. For example, a list of postal state name abbreviations.
Copy	An authentic duplicate, reproduction, or version of a record. Copies are created for output (as in copying a record to a CD-ROM for shipment to a researcher), for preservation, or for backup purposes).
Data Type	The organization of information according to preset specifications, usually a file format (e.g., common separated text files, fixed length text files, Microsoft Word 98, TIFF, etc.)
Disposition Agreement	For the purposes of this document, a generalized term that includes all types of agreements (records schedules, deeds of gift, etc.) that contain instructions on what is to be done with records after they are no longer in active use by their originating entity.
Disposition Instructions	The instructions contained in a disposition agreement that mandate what is to be done with records at certain points in their lifecycle. Disposition Instructions may consist of: <ul style="list-style-type: none"> • Retain records for a specified length of time. • Transfer records to temporary storage. • Transfer records to NARA's legal custody. • Destroy records.
Export - Media	To create an exact image of an instance of media on another instance of media.
Export - Records	To remove records from ERA and provide them to a third party. The exported records no longer exist in ERA at the conclusion of an export.

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Term	Definition
Output	A means of making a record available outside of the system, such as copying files to digital media, printing records to paper, or transmitting copies over the internet. The record in ERA archival storage is not affected by being output.
Present Electronically	Reproduce records on an electronic device (computer monitor, audio, etc.) as opposed to printing text or images to paper, or writing records to media. The record in ERA archival storage is not affected by being presented electronically.
Preservation Process	A process appropriate for ensuring the continued existence, availability, and authenticity of records over time.
Record	A unit of recorded information, of any type, that is made or received in the course of activity and is kept because it provides evidence of the activity, is required by law or regulation, or contains valuable information.
Review Determination	The results of an access review, determining whether records will be released, withheld, redacted, transferred, etc.
System	Includes all of the associated equipment, facilities, material, software, hardware, policy, technical documentation, services, and personnel required for operations and support at NARA.
Technical Specification	Provides a definition of the encoding, syntax, and semantics of an electronic record (e.g., schemas, logical data models, data dictionaries, etc.)
Template	A set of specifications about a record, a set of records, or a records management transaction. Every record or set of records stored in the system should conform to a template registered for that type of record or set of records, either at the time it is ingested into the system or through a subsequent transformation. Every records management transaction should include the steps and either include or produce the data specified in a registered template for that type of transaction.
Transfer	The actions surrounding the movement of records into ERA from a third party (originating entity, donor, presidential administration, etc.). Transfer may consist of FTP, receiving and loading records from media, or any other method by which records make their way from an originating entity to ERA.
Transformation	The process, or the results of a process, of reformatting or otherwise changing the way an electronic record is digitally encoded in order to reduce or eliminate dependencies on specific hardware or software, while preserving authenticity.

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Term	Definition
Version	When a record has been copied, and the copy has undergone changes that have been made for reasons such as preservation processing, redaction, etc., the copy then becomes a new version of the record.
Workbench	A set of end-user tools related to performance of a common role or job in the system. Each role/job has its own workbench that differs from another role/job workbench. The tools themselves are provided by a central authority and controlled under configuration management.